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British Guiana.

ADMINISTRATION REPORT

OF THE

DIRECTOR OF AGRICULTURE

FOR THE YEAR

1939.

Printed by the Authority of His Excellency the Governor.

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DEPARTMENT OF AGRICULTURE.

ADMINISTRATION REPORT OF THE DIRECTOR OF AGRICULTURE FOR 1939.

SECTION I.

AGRICULTURE IN THE COLONY.

General.

During the year under review the most important event that took place was the visit of the Royal Commission and the collated information submitted has clearly shown that agriculture in the Colony has made some progress during the last century. Professor Engledow, the Agricultural Expert attached to the Commission visited the Department of Agriculture and toured the Colony accompanied either by the Director of Agriculture or the Agricultural Officers.

2. As a result of the World War and the necessity for increased food production organisation, His Excellency the Governor appointed a Food Production Committee, with the Director of Agriculture as Chairman and representatives of the planting community, to advise in connection with Allotment Schemes around the city of Georgetown and in New Amsterdam. The chief purpose of this Committee is to help to ensure that "foodstuffs should be grown in sufficient quantities to supply the local demand in the event of failure to obtain imported foodstuffs." Considerations such as increase in the rice crop, conservation of planting material of the main food crops, co-operation of the sugar estates in the extension of rice and other food crop cultivation on their lands, extension of production on Government owned lands, trials with substitutes for wheat flour, are all dealt with. British Guiana is in a fortunate position in comparison with many countries as regards food in war time, for most of the essential foodstuffs can be obtained within the Colony from local produce.

3. The necessity for increasing the livestock output at present is clear. There are important sections of the Colony's population engaged in industries in the interior and the supply of pickled meats to these areas must be maintained. The British West Indies who previously obtained meat supplies from abroad will no longer find it quite as easy to do so and will expect bigger British Guiana supplies. In this connection, the cattle breeding and agistment scheme in Essequibo is extending along promising lines. Four bulls are at stud in this area and there are indications that owners in the locality are already learning to appreciate the benefit of the resulting stock improvement.

4. Through a grant from the Colonial Development Fund there has been made the appointment of a Tobacco Officer for a period of three years.

Weather Conditions.

5. Details of the meteorological data obtained during the year are to be found in the Annual Meteorological Report of the Department. The year was an abnormally dry one, the total rainfall recorded at the Botanic Gardens being only 65.71 inches or rather more than 25 inches below the average for the last 59 years. In the early part of the year the light rainfall was evenly distributed, but from August to the end of the year dry weather prevailed, and the failure of the mid-year rains, presaging a serious drought, was detrimental to every phase of agriculture. Major droughts, due to the failure of the short wet season, seem to occur (as far as records go) about once in fourteen years.

6. The mean rainfall for 1939 on the coastal area of the three counties is shown hereunder :—

Berbice ...	...76 inches.
Demerara ...	...67.16 inches.
Essequibo ...	...75.35 inches.

AGRICULTURAL INDUSTRIES.

Sugar.

7. The sugar crop for 1939 amounted to 189,245 tons, a decrease on the record output of 195,944 tons in 1936 but sugar prices were better. Of the 67,718 acres under cane, 62,004 acres were reaped during the year—60,383 on the sugar estates and 1,621 from farmers' canes. The general average yield of sugar per English acre was 3.05 tons and on sugar estates was 3.07 tons.

8. Table I gives the returns of cane acreages reaped, production of sugar, yield per acre and rum produced in 1939, and Table II gives the exports of sugar, rum, molasses and molascuit for 1939.

TABLE I.

CANE ACREAGES REAPED, PRODUCTION OF SUGAR, YIELD PER ACRE, AND RUM PRODUCED IN BRITISH GUIANA DURING 1939.

Year.	Area Reaped (inclusive of farmers' canes)— English Acres.			Sugar Produced (inclusive of farmers' canes) — tons.			Yield per acre — tons.			Rum Produced—Proof Gallons.		
	Berbice.	Demerara.	Total: Colony.	Berbice.	Demerara.	Total: Colony.	Berbice.	Demerara.	Total: Colony.	Berbice.	Demerara.	Total: Colony.
1939 ...	22,918	39,086	62,004	76,893	118,352	189,245	3.35	3.03	3.05	534,281	888,290	1,422,571

TABLE II.

EXPORTS OF SUGAR, RUM, MOLASSES AND MOLASCUIT—1939.

Year.	Sugar.			Rum.		Molasses.		Molascuit.	
	Tons.	Value in $	Value per ton in $	Proof Gallons.	Value in $	Gallons.	Value in $	Tons.	Value in $
1939 ...	179,103	8,134,190	45.9	978,817	430,114	5,360,270	279,318	295	5,034

Of the areas allocated to cane, 37,506.26 acres are under P.O.J. 2878; 24,162.42 acres under Diamond 10 and 1,803.92 acres under D.625

9. The output of sugar from farmers' canes during 1939 was 3,479 tons from 1,621 English acres.

Rice.

10. The acreage under rice during 1939 was 60,007 acres, but including the spring crop, the area actually reaped was 72,132 acres. The yield was returned at 67,314 tons padi which is equivalent to 40,388 tons rice.

11. Table III gives the returns of acreages reaped in the three counties, production and exports during the year.

TABLE III.

RICE ACREAGES, PRODUCTION AND EXPORTS, 1939.

Year.	Area Reaped (Spring and Autumn Crops) English Acres.					Yields.		Exports.				
								Rice.			Padi.	
	Berbice.	Demerara.	Essequibo. Mainland	Essequibo. Islands	British Guiana total acreage (reaped).	Padi tons.	Rice tons (50% yield of cleaned Rice from Padi)	Tons.	Total Value in dollars.	Value per ton in dollars.	lb.	Total Value in dollars.
1939 ...	30,843	21,706	8,382	11,201	72,132	67,314	40,388	12,501	582,547	46 6	11,738	145

Coconuts.

12. The area under coconuts in 1939 was 23,581 acres. The exports were as follows :—

Coconuts	...	... 318,175 valued at $2,710.
Copra	...	... 507 tons valued at $22,420.
Coconut Oil	...	... 10,380 gallons valued at $5,291.

Coffee.

13. The area under coffee in 1939 was 2,680 acres. There was an increase in local price for coffee beans following on the outbreak of war. The exports were 27,079 lb. valued at $1,816.

Citrus and Other Fruits.

14. The area under grapefruit, oranges and other fruit was 640 acres, and that under limes was returned at 1,093 acres. The light rains early in the year favoured the setting of good crops and the lime crops were plentiful. Other citrus crops also were good but the dry weather tended towards small fruit, in some cases an advantage.

15. The exports were as follows :—

Concentrated lime juice	...840 gallons valued at $336.
Essential oil of limes	...588 gallons valued at $12,848.

Vegetable Crops.

16. The area under ground provisions was 14,780 acres and under corn 731 acres. Small increases are recorded in all three counties. The area varies depending on weather and market conditions and on the amount of wage-earning employment available.

Cacao.

17. The area under cacao was 403 acres. The crop continues to provide for a small local market for the manufacture of drinking chocolate but the general standard of cacao produced is not such as to compete with the imported product.

Livestock.

18. The Veterinary Surgeon reports that the outlook for 1939 for livestock has been much improved over the previous year through the continual rise in prices for stock that began in 1938. This is reflected in the increasing demands by farmers on the Government Stock Farm for improved breeding stock. Unfortunately, the small size of the Government Stock Farm renders ineffectual any material fulfilment of the demand and thus hinders to a great degree any appreciable improvement on a large scale of the livestock of the Colony. It cannot be too strongly urged that the enlargement of the Government Stock Farm is considerably overdue—for it is the work on Animal Husbandry done by the farm that it is of material benefit to the farmer and the Colony as a whole.

19. The grading up of small dairy farmers' cattle with pure-bred Holstein and Guernsey bulls is now being extended to the country districts.

20. The condition of the creole slaughter cattle seems to be getting progressively worse, with the exception of the ranches that are doing some good work with Hereford breeding. Large numbers of grade bulls from the Red Poll and Hereford bulls at the Government Stock Farm and at La Belle Alliance are urgently needed to replace the scrub bulls owned by farmers. Not until the beef herd improvement is materially speeded up can the colony take advantage of the West Indian market for slaughter stock.

21. The livestock returns for 1939 are as under :—

Cattle	...	...133,351
Horses	...	... 2,808
Buffaloes	...	... 16
Goats	...	... 11,346
Mules	...	... 1,537
Asses	...	... 7,628
Sheep	...	... 31,895
Swine	...	... 27,248

22. *Animal Health.*—There was very little sickness reported among animals throughout the year. Three cases of anthrax occurred in cattle and the necessary preventive measures were enforced and no further deaths occurred. Three cases of anaplasmosis were reported in two herds of dairy cattle. The animals affected were ¾ grade Holstein heifers that had never become naturally immunised against Red Water. Injections of sodi-cacodylate were given to each of the heifers who subsequently recovered from the attack.

SECTION II.

WORK OF THE DEPARTMENT OF AGRICULTURE.

Establishment.

23. *Appointments.*—Mr. H. A. Fraser, B.V.Sc., appointed Veterinary Surgeon, as from 1st January, 1939.

Mr. M. A. G. Hanschell, appointed Agricultural Superintendent, as from 6th November, 1939.

Mr. T. W. Bradshaw, appointed Tobacco Officer under a grant from the Colonial Development Fund for a period of three years, as from 17th November, 1939.

Miss M. R. Christiani, appointed Typist-Clerk from 12th September, 1939, *vice* Miss R. Delph, transferred.

24. *Leave.*—The following officers were on leave during the year ;—

Mr. W. G. Delph, Registrar of Banks, from 23rd December, 1938, to 20th June, 1939.
Mr. C. L. C. Bourne, Assistant Chemist, from 11th May, 1939, to 28th December, 1939.
Mr. H. A. Cole, Agricultural Instructor, from 29th August, 1939, to 10th January, 1940.
Mr. E. M. Peterkin, Agricultural Superintendent, from 8th June, 1939, to 22nd October, 1939.
Mr. E. G. Benson, Agricultural Superintendent, from 6th August, to 5th February, 1940.
Mr. A. Hu-a-Kam, Messenger from 1st May, 1939, to 30th July, 1939.

25. *Retirement.*—Mr. E. M. Peterkin, Agricultural Superintendent, retired on the grounds of ill-health on 23rd October, 1939, on the cessation of his leave of absence.

A.—THE FIELD BRANCH.

26. The distribution of the field staff is given in the staff list at the beginning of this report.

I.—Investigation and Extension.

Pure Line seed padi distribution.

27. The following table gives particulars of seed padi distributed during the year under review :—

District		Pure line seed (Departmental stocks) Bags (of 140 lb.)
Berbice	...	... 90 bags.
East Demerara	...	... 125 bags.
West Demerara	...	... 186 bags.
Essequibo and Islands	...	... 277 bags.

Banana Experimental Plots.

28. The plot at Middlesex, having been practically wiped out by Panama Disease, was abandoned and planted with other crops. The plot at Supply was maintained during the year, but the wizened and stunted plants and the poor bunches of fruit produced were entirely useless as a commercial proposition. Panama Disease, which had increased slightly during the year, was accentuated by the drought, and a loss by wilting of 27 per cent. of the plants in September had increased to 45 per cent. at the end of the year, when the plot was finally abandoned.

Tobacco.

29. Mr. T. W. Bradshaw, M.C., was appointed Tobacco Officer under a grant from the Colonial Development Fund and arrived in the Colony on 17th November, 1939. Mr. Bradshaw has had many years of commercial experience in Nyasaland in the cultivation, curing and grading of bright cigarette leaf, and the object of this appointment is to find whether it is possible to substitute part of the imported cigarette leaf by a local product. Experimental flue-curing had been tried by the Plant Breeder, who had demonstrated that the local leaf can be greatly improved by better cultivation and expert curing. It is not certain, however, that the grade can be raised to the standard required by local cigarette factories, and trials are being carried out to answer that question. High rainfall, irregular dry seasons, heavy soils, and prevalence of tobacco diseases will be serious problems in this connection. Another branch of the tobacco industry to receive attention is the Black Fat trade, but the method of curing is a trade secret and a long experimental period may be required before a suitable formula can be devised. The size of the two tobacco trades can be judged by the average imports over the past year—

Leaf tobacco (Black Fat)	169,317 lb.	...	valued $25,405
,, ,, (Cigarette)	310,592 lb.	...	,, $81,091

Land Settlement.

30. *Anna Regina Estates.*—These Estates were leased to Mr. C. R. Chan for a period of one year and the estates were maintained in fair order. The intake trenches bringing water from the Tapacooma Conservancy were thoroughly cleaned for the first time since 1937, and no further irrigation difficulties occurred in connection with the autumn rice crop which was a good one. Work on the installation of the drainage pump at Anna Regina and the high-level canal scheme at La Belle Alliance made satisfactory progress.

31. In 1940 Government will take over the Estates in connection with the policy of increasing the production of food crops.

32. *Bush Lot Land Settlement.*—The total area planted under rice at the Settlement was 186 acres and a good crop was reaped. Ground provisions are also grown by the settlers and an area of 18 acres aback of the settlement pasture was cleared for this purpose. The necessary maintenance works, including cleaning of drainage and irrigation trenches, instalation of a box-koker, erection of latrines have been carried out.

33. The following is a statement of expenditure for the year :—

Maintenance and Renewal Works	...	$ 1,603.63
Bush Lot Staff ...	...	681 34
„ „ Contingencies ...	...	127 97
„ „ Miscellaneous ...	...	178 61
Drainage Rates, 1939 ...	...	538 55
Advances to Bush Lot Settlers	...	599 43
Total Expenditure	...	$ 3,729.53

34. The revenue derived from the Anna Regina Estates and Bush Lot Land Settlement is shown hereunder :—

Lease of Anna Regina Estates ...	...	$ 1,625 00
Sale of houses	...	35 00
Bush Lot Rents ...	...	1,586 75
Sale of scrap, etc. ...	...	365 03
Refund of Advances ...	...	1,410 19
Interest on Advances ...	...	116 41
		$5,138 38
Less amounts brought to account by Treasury for 1940		316 19
Total Revenue ...		$ 4,822 19

Beekeeping.

35. During the year 158 queens bred from imported Italian stock were distributed ; in addition 24 nucleus hives were sold to beginners. Out apiaries were started in country districts both to act as demonstration centres and to secure reliable information in regard to the honey-producing qualities of the areas tried. The year was a bad one for beekeepers due, it was claimed, mainly to unfavourable weather conditions ; it is feared, however, that lack of feeding during the rainy seasons was an important contributing factor.

Botanic Gardens and Nurseries.

36. The year was abnormally dry, and though the light rains in the early months were beneficial, the dry weather at the end of the year was a serious handicap, the effects of which were however, greatly mitigated by the Pipe Line water supply now available in the Front Garden and nursery.

37. A number of new introductions were made, both of ornamental and economic plants. The Aviary was altered and enlarged. The roads, mango beds, fruit dam and trenches of the Experiment Station were placed under the charge of the Superintendent. The removal of the dead clumps of *Bambusa arundinacea* on the avenue was completed and in the Parklands was continued.

38. An embossing machine was obtained for printing labels. A Brier nursery for budding and some new beds of roses to supply cut flowers were made. Four old palms were removed from the Public Buildings Garden and some planting of shrubs was carried out at the Victoria Law Courts.

39. *Seed and Plant Exchange.*—The usual exchange of seed and plant material with allied institutions and private individuals was carried on during the year. Introductions included seed of Chick Pea and Lespedeza species, several varieties of Sun Flower and a number of fibre plants including suckers of Manila Hemp from St. Vincent, Sunn Hemp seed from Trinidad and Rozelle seed from India. In addition, a number of new vegetable varieties were purchased from seedsmen. Introductions of ornamentals included a selection of species received from Stellenbosch University,

the Arnold Arboretum, Porto Rico and Mauritius, and six new palm species from various sources. A selection of seed and a Wardian case of plants were received from Trinidad. Details of plant exchanges were published in the Agricultural Journal.

III.—AGRICULTURAL EDUCATION.

School Gardens.

40. There are twenty-nine school gardens registered by the Department ;—

Berbice	...	12
East Demerara	...	5
Georgetown	...	1
West Demerara	...	5
Essequibo (Mainland)	...	4
,, (Islands)	...	2

Seeds obtained from Messrs. Hastings Co., Atlanta, Georgia, have been distributed free, and satisfactory progress is being made. Various unaided gardens are also assisted with free distribution of seed and instructions and visits when required by the Agricultural Officers.

Berbice Agricultural Exhibition.

41. An Agricultural Exhibition was held in Berbice in April, 1939. A large number of exhibits, representative of the major and minor industries of the county was received. There were twelve classes displayed, namely, sugar cane, rice, coconuts, coffee, provisions crops, vegetable crops, fruit, cacao, miscellaneous crops, home manufactures, beekeeping and livestock. The Department of Agriculture's exhibits occupied two stands, one displayed exhibits of an educational value and the other contained exhibits connected with sugar.

42. Cups were presented by Messrs. Barclays Bank and the Royal Bank of Canada and His Excellency the Governor and the Director of Agriculture gave special prizes. Various diplomas of merit were also awarded.

Field Days.

43. Field Days for sugar planters were held on June 5th, 12th, 19th and 26th. A total of 92 persons of sugar estates staff were shown over the Station and short talks were delivered by officers of the Department.

Field Competitions.

44. The usual field competitions were not held during the year but owing to abnormal rain in April which caused flooding of provision farms, competitions were arranged in the Berbice District with the object of encouraging farmers to reclaim their plots for renewed cultivation. Much interest was taken in the competitions and the total value of the prizes awarded was $150.00. The conditions of these mixed farm competitions were as follows :—

Early establishment of area	... 40	points
Extent of area cultivated	... 20	,,
Cultural operations	... 20	,,
Drainage	... 20	,,

B.—THE RESEARCH BRANCH.

Sugar.

45. Cane varieties imported during the year through the Central Quarantine Station, Trinidad, were :—

B. 3215, B. 3254, B. 3307, B. 3337, B. 34110, B. 35176, B. 35187, B. 35200, B. 35204, B. 35237, Co. 299, Co. 313, Co. 331, Co. 352, Co. 360, Co. 413, Co. 432.

46. Of the earlier importations, P.O.J. 2878 now occupies 57.6 per cent. of the estates' cane acreage, Co. 213 continues to do well and is being commercially tested,

and Co. 419 is showing much promise. Many of the importations are also being used in the breeding work.

47. In view of their promising performance in the replicated variety tests, D. 49/30, D. 66/30, D. 75/30, D. 419/33, D. 456/33 and D. 166/34 have been distributed to the estates and small areas of some have already been planted on a commercial scale with satisfactory results. There is, indeed, a considerable demand for cuttings of D. 419/33 and D. 166/34, of which the respective parents are Co. 281 x Diamond 10 and P.O.J. 2878 x Sorghum.

48. The Sugar Experiment Stations' Committee has decided to increase the number of seedlings bred annually but the breeding and experimental work was recently upset by the drought which prevailed in the latter half of the year ; the adverse effects will be felt for some time to come.

49. Four irrigation–manurial trials, carried on at different sites for three harvests, have indicated that there is no advantage, under local conditions, in irrigating, more than once every four weeks when the rainfall for that period has not exceeded two inches, and further that more frequent irrigation does not enable the cane to use heavier doses of nitrogen than those commonly employed.

50. The dressings of sulphate of ammonia, advocated by the Department of Agriculture, as a result of several years' research, have now been widely adopted.

51. An interesting observation from the fertiliser trials is the suggestion that the muriate is superior to the sulphate of potash under local conditions ; the matter is being investigated further.

Rice.

52. Seventy-one varieties were added to the Progeny Rows during the year. These comprised 5 varieties from Burma, 50 from India and 6 from the United States of America.

53. One hundred and forty-four varieties were under test by the quasi-factorial design which can now definitely be accepted as an efficient test for large numbers of varieties. Sixty-four of these were discarded on the results of this layout. Nine outstanding varieties, four long grain and five medium grain, will be put into replicated variety trials. In addition, progeny rows for varieties which had to be acclimatised and purified totalled 77 for the spring crop and 109 for the autumn crop.

54. Among the long-grain varieties, *D. 298* and *D. 259* were outstanding, both outyielding the standard *Demerara Creole* by an average of two bags per acre. *D. 298* has a grain slightly longer than *Demerara Creole* and without the curve which the latter possesses. The grain of *D259* is fat, similar to the Carolina type, but longer.

55. Among the medium-grained varieties *D. 255* and *D .256* were the best. Their growth habit is good, and their grains slightly longer and wider than the standard *No. 79*.

56. A drought trial was held to test the drought resistant qualities of *D 99*, *D. 109*, and *D. 110*, which have been proved from previous trials to be superior yielding varieties to *No. 79*, which has a high reputation for its resistance to drought. Although indications pointed to *D. 99* as being the best, no definite conclusions can yet be drawn.

57. Seed of *Rexora*, a variety which is broadcast and not transplanted, and which it was thought might be suitable for the broadcast areas of the Colony, was obtained from Dutch Guiana. It proved definitely inferior to the standard *No. 79* against which it was tried.

58. On the manurial side, dressings of Superphosphate from 0 to 50 cwt. per acre were tried in a manurial trial to determine whether the applications had any residual effect. No definite effect was shown.

59. Milling trials were carried out with *D. 99* and *D. 110*, two medium grain varieties heavier yielding than the standard *No. 79*. The milled rice from both varieties were graded as No. 1. according to the Rice Marketing Board's grades. Tests carried out on the cooking qualities of both rices proved them to be satisfactory.

Botany and Plant Pathology.

60. No serious disease of major crops occurred during the year. Several diseases of minor crops were recorded, including a die back of cassava in dry weather on shallow pegasse underlaid by clay and due chiefly to lack of proper cultivation to enable the roots to penetrate the lower soil. Inspection of plant imports was carried out in conjunction with the Entomological Division.

61. The cassava trial laid down at Pln. Toevlugt in 1938 was reaped, and another similar trial laid down at Pln. Middlesex, the object of both trials being to obtain information as to the acreage yields to be expected from this crop. The routine work of the Jenman Herbarium was continued and the usual collection of seed made to supply the desiderata of foreign correspondents and allied institutions.

Chemistry.

62. The Chemist was seconded for duty with the Guiana Commission of the President's Advisory Committee on Political Refugees, and accompanied the Commission on their tour of the interior. A preliminary report on the soils of the interior was published as an Appendix to the Report of the Commission, and a more comprehensive report was submitted after the soil samples had been analysed. Later, information was required on the soils of the Anchor Ranch, Berbice River, and a separate report on this was submitted to Government.

63. The position with regard to the increasing acidity of the sugar cane soils owing to the continuous use of sulphate of ammonia as a fertilizer was reviewed. Briefly, the results of the investigation show that the danger from acidity lies in accumulations of soluble alumina which may reach a concentration sufficiently high to hinder root development. On the pegassy soils the content of "active" alumina is frequently over 1,000 parts per million, and samples from abandoned pegasse areas have reached 1,900 p.p.m. While it is difficult to state the "danger limit" of alumina, it appears that a pegassy soil which is more acidic than pH 5.0 should be dressed with limestone. Previous workers have found that the solubility of alumina rises rapidly below pH 4.7, and some evidence has been found that this figure can be applied here.

64. On the clays, even highly acidic soils with pH 4.5 or less show a much lower content of active alumina (less than 400 p.p.m.) and it seems that the cane varieties grown in this Colony can tolerate this concentration. Consequently, the clay soils do not appear to be in danger of excessive acidity, but it would be safer to to lime *all* sugar cane soils with pH below 5.0.

65. It has been known for many years that the pastures of the Rupununi savannahs are very low in lime and phosphate, and mineral deficiency in the cattle is shown by the fact that bone-chewing is prevalent. River communication with Georgetown is so difficult on account of rapids that the freight charge from Georgetown is about 12 cents per pound, and this makes the feeding of a supplementary mineral ration too expensive for general application. The pastures of the intermediate savannahs are even lower in minerals than those of the Rupununi District, and the coastland grazing areas, though less deficient in lime and phosphate, are liable to extensive flooding which the Rupununi animals cannot withstand. Thus there are no suitable pastures on which this mineral deficiency can be corrected naturally.

66. The Chemist was invited to attend the meetings of the Food Production Committee, and investigations on technical points were carried out in the Chemical Division. In particular, the possibility of including a proportion of rice flour in bread was studied, and the fineness of the rice flour seemed to be of great importance, and some laboratory work was carried out on this subject. Salting and drying of local fish was also investigated, and after small-scale tests a simple inexpensive method was found to be suitable.

67. As a result of investigations connected with the proposed central rice mill for the Essequibo Coast, the Chemist accompanied Mr. S. H. Seymour of Pln. Affiance, Essequibo, on a visit to Mr. H. N. Van Dijk's rice mill at Nieuw Nickerie, Surinam. The principal object of this visit was to examine and test the method of mechanical drying of parboiled padi which has been developed by Mr. Van Dijk. Sixty bags of *Blue Stick* padi from Pln. Affiance were taken to Nickerie, and a complete parboiling, drying, and milling test was carried out. A joint report on the investigation was submitted to the Director of Agriculture.

Entomology.

68. The Entomologist was appointed to act as Deputy Director of Agriculture and continued to do so for the whole of 1939.

69. Until the long drought set in the Amazon Fly had maintained its position in the control of *Diatraea* and especially *D. saccharalis*. The examination of Pln. Lusignan carried out in January will serve as an example in this connection. On that estate three fields of Diamond 10 examined during the month showed an average parasitism of *D. saccharalis* of 40 per cent., the minimum being 6.6 per cent., the maximum 66.6 per cent. ; no *D. canella* were parasitised in these fields.

70. Following on a request from the Government of Malaya arrangements were made for a trial shipment of the Amazon Fly to that country, unfortunately the shipment was made at the beginning of the European war and as a result of the delay in transporting, the insects died in transit to Farnham House Laboratory, England. It has been decided to make no further shipments during the War.

71. Outbreaks of Coconut caterpiller occurred in Berbice, the Mahaicony District and Kitty near Georgetown and in Georgetown itself during the year. Owners of palms showed great interest in the control of this pest ; there is little doubt that the introduction of the Plant Diseases and Pests Prevention Ordinance and the serving of notices on the owners of palms to carry out control measures has had much to do with this.

72. The work of re-arranging the collection was continued during the year and progress is satisfactory ; three additional cabinets were obtained. Specimens of insects were sent to the Imperial Institute of Entomology for determination and Mr. Alan Stone of the U.S. Department of Agriculture determined some fruit flies.

73. Collections of mammal and bird skins have also been started. Two bookcases have been added to accommodate additions to the Library.

74. The Division put up insect exhibits at the Berbice Agricultural Show held in New Amsterdam in April. Amongst the exhibits were several posters dealing with the life-history and control of some common insects. These attracted considerable attention, and following this, reprints were obtained and several hundred distributed through the Department of Education to Primary Schools in the country.

C.—LIVESTOCK BRANCH.

Stock Farm.

75. The pure bred cattle on the farm at 31st December, 1939, was as follows :—

Breed.	Bulls.	Cows.	Heifers.	Calves.		Total.
				Bulls.	Heifers.	
Holstein	3	2	2	1	1	9
Red Poll	2	2	...	2	...	6
Hereford	1	2	...	...	2	5
Guernsey	2	...	...	...	...	2
	8	6	2	3	3	22

76. The grading up of a small herd of creole or native cows with Red Poll and Hereford bulls started in 1938, produced 5 bulls and 4 heifers of the Red Poll-Creole cross and 3 bulls of the Hereford-Creole cross. The grade bulls are to replace scrub bulls owned by farmers, and the heifers are to be retained for further breeding work.

77. Two pens of Barred Plymouth Rocks (20 birds) imported through the Canadian Department of Agriculture arrived in November. The trap nest records of the Rhode Island Reds and Barred Plymouth Rocks are very satisfactory, averaging 204 and 206 eggs per pen respectively. The production for the year was 7,917 eggs ; 164 birds and 128 chicks were sold for breeding purposes.

78. The Canadian Berkshire sows gave two litters each for the year with an average litter size of 9 piglets. The weight of weanlings at 8 weeks of age averaged 39.3 lb. 69 pigs were sold to farmers for breeding purposes.

Breeding Stations.

79. The Red Poll bull stationed at Whim was transferred to Pln. Skeldon for four months. It is regrettable that in a district where good breeding bulls are necessary farmers are not making full use of this animal. 42 cows were bred for the year.

80. The Guernsey bull at the Leguan station was bred to 49 cows owned by small peasant cattle owners. Two pens of Rhode Island Red pullets are kept for breeding purposes for the district. Plots of fodder plants are grown at the station but there are few requests for cuttings.

81. Farmers have made good use of the Holstein bull at the Kitty station.

La Belle Alliance Agistment Area.

82. Satisfactory progress has been made with the breeding work. 282 cows have been served during the year. The first half-bred calf was born on the 17th November and five heifer and nine bull calves by the end of December. The demand for services is still heavy and an additional bull is urgently needed. Agistment fees totalling $589.52 were collected during the year and fees totalling $342.94 are still outstanding. These will be collected when the owners remove their cattle from the pasture. There are now 239 head of cattle agisted.

83. The problem of maintaining the pasture has been rendered difficult as the result of eight months of practically continuous dry weather. The paddocks have been irrigated as far as available water supplies permitted and reserve areas utilised, with the result that there has been no serious shortage of grazing.

D.—AGRICULTURAL ECONOMICS, STATISTICS AND PUBLICATIONS BRANCH.

84. Three Economic Surveys were commenced during the year, one of the farming conditions in the rice growing areas of West Demerara, one of the cattle industry in East Demerara, and one of beekeeping throughout the Colony.

85. The collection of prices of locally grown products in the Georgetown market has been maintained and this information has been supplied regularly by telegram to farmers farthest removed from the market centre. In addition, export prices of the Colony's chief agricultural products were reduced to an f.o.b basis each month and submitted for Government's information.

Publications.

86. The *Agricultural Journal of British Guiana* appeared in its tenth volume Included in the contributions was a "Catalogue of the *Lepidoptera Rhopalocera* (Butterflies) of British Guiana" prepared by Arthur Hall, F.R. Ent. S. It was decided at the end of the year that, as an economy measure, publication should be suspended for the duration of the War. The *Farm Journal,* in its fourth year, appeared to be still gaining in popularity with the farming community. It is envisaged that with the "Grow More Food" campaign and other activities about which the Department finds it necessary to distribute simple and reliable information, this Journal will continue to be most useful. Various original articles by officers of the Department of Agriculture were published in the *Agricultural Journal.*

87. Sugar Bulletin No. 8, recording the results of another year's work of the Sugar Experiment Station, was published.

88. A paper on "The Amazon Fly (*Metagonistylum minense* Towns) in British Guiana" by L. D. Cleare, Entomologist, appeared in the Bulletin of Entomological Research, Vol. 30, Part 1.

E.—CO-OPERATIVE CREDIT BANKS' BRANCH.

89. The Credit Banks, which operate under the provisions of Ordinance No. 28 of 1933, continued under the chairmanship of the District Agricultural Officers. The Director of Agriculture is Chairman of the Co-operative Credit Banks Board, and the Registrar, an officer of the Department of Agriculture, is Secretary.

90. On 31st. December, 1939, there were 28 banks on the register. Seven of these are still in course of liquidation. At the close of the year the membership of the 21 functioning banks was 9,153; West Indians owned 41,362 shares and East Indians 21,323 out of a total issue of 68,092. The paid-up capital stood at $68,091.24.

91. The lending capital of the banks is derived from two main sources—share capital and Government loans.

92. The amount borrowed from Government is $67,363 and at 31st December, the balance owing was $12,602.40.

93. Loans are made to members only and these are chiefly small agriculturists with adequate security, raising crops of padi, sugar cane, ground provisions, etc. Some business is also done with persons engaged in coconut oil manufacture, pig-keeping, huckstering, gold and diamond seeking, etc. Money is also lent for the repair of buildings and for the purchase of properties. At the end of the year loans totalling $89,359.60 and interest amounting to $4,263.66 were outstanding.

94. The provision under the rules for co-operative credit banks for building up a reserve fund out of profits is fixed at 4 per centum per annum until it equals one-third and thereafter at 2 per centum per annum until it equals two-thirds of the paid-up capital of a bank.

95. After utilizing the sum of $12,368.34 from reserve in their business, as provided by the rules, the banks still carried in this connection at 31st December, investments amounting to $26,377.86. In addition, $759.51 has been allocated for 1939 to be invested later.

96. There is a Secretaries' Guarantee Fund in connection with the banks, the value of which was $4,314.06 at the end of the year.

SECTION III.

ADVISORY BOARD OF AGRICULTURE.

97. The usual meetings of the Board were held during the year and the Minutes published in the *Agricultural Journal.*

SECTION IV.

SUMMARY OF AGRICULTURAL LEGISLATION ENACTED DURING 1939.

98. The following agricultural legislation was enacted during the year :—

1. Ordinance No. 17 of 1939—Coconut Products (Control Amendment) Ordinance, 1939, to provide for the fixing of duties on coconut products.
2. Order-in-Council No. 88—Prohibition of the importation of any cattle into Antigua.
3. Order-in-Council No. 124—Importation of animals into St. Lucia.
4. Order-in-Council No. 247—Under section 3 of the Plant Diseases and Pests (Prevention) Ordinance 1935, (Ordinance No. 37 of 1935) prescribing the conditions under which Broom Corn may be imported into the Colony.
5. Rice (Export Blending and Grading) Regulations, 1939.
6. Defence (Rice Control) Regulations, 1939.
7. Defence (Rice Control) (Amendment) Regulations, 1939.

J. SYDNEY DASH,
Director of Agriculture.

August 31, 1940.